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10/735,122	12/12/2003	Grant Kloster	42P16019	1922
<div>59796      7590      06/21/2007</div> <div>INTEL CORPORATION c/o INTELLEVATE, LLC P.O. BOX 52050 MINNEAPOLIS, MN 55402</div>				
			EXAMINER TSOY, ELENA	
			ART UNIT 1762	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/735,122

Applicant(s)

KLOSTER ET AL.

Examiner

Elena Tsou

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,6-9,12-17 and 25-31 is/are pending in the application.
- 4a) Of the above claim(s) 6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,7-9,12-17 and 25-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/26/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### ***Election/Restrictions***

Applicant's election without traverse of species (iv) of Group A (12-17, 25-31) and species (i) of Group B (claims 8-9), in the reply filed on May 14, 2007 is acknowledged. Non-elected claims 2-5 and 10-11 have been cancelled. Claims 1, 6-9, 12-17 and 25-31 are pending in the application. Claim 6 is withdrawn from consideration as further limiting non-elected claim 4.

### ***Claim Objections***

1. Claims 13, 14, 28, and 29 are objected to because of the following informalities:

Claim 13, line 3, "CH<sub>2</sub> molecules" should be changed to "CH<sub>2</sub> ~~molecules~~ groups" because CH<sub>2</sub> are not molecules.

Claims 14, 28, 29, line 2, "CH<sub>2</sub> molecules" should be changed to "CH<sub>2</sub> ~~molecules~~ groups" because CH<sub>2</sub> are not molecules.

Claim 14, line 2, the phrase "about 4 CH<sub>2</sub>" should be changed to "~~about~~ 4 CH<sub>2</sub>" because amount of CH<sub>2</sub> could be only integer.

The Examiner Note for examining purposes a phrase "a substantially long chain of CH<sub>2</sub> molecules" in claims 13 and 28 was interpreted as chain of at least 4 CH<sub>2</sub> groups.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 7-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Ivanov et al (US 6881437).

Ivanov et al disclose a method of **sealing** a *porous* dielectric layer 144 (See column 46, lines 25-26) adjacent a substrate layer 142 (See column 38, lines 48-60) with a hydrophobic dielectric 156 (See column 46, lines 20-21), the method comprising depositing **any** silane material (See column 46, lines 32-34) such as halogenated silanes and/or polymeric silanes having silane functional groups (claimed coupling agent) (See column 46, lines 20-24) to the porous layer, e.g. SiO<sub>2</sub> layer (known to have reactive SiOH groups on the surface) (See column 38, line 60) to *absorb* the silane material within the dielectric material 144 (See column 46, lines 56-57); exposing the silane material *absorbed* within dielectric layer 144 to deionized water (claimed crosslinking sealing agent) after the deposition of the silane material to hydrolize and remove any hydrochloric acid such that a **strong bond** between hydrophobic 156 and dielectric layer 144 may be formed (i.e. the silane material reacts with the porous dielectric SiO<sub>2</sub> layer) (See column 46, lines 51-59).

It is the Examiner's position that the **strong bond** is formed by reacting Si-Cl groups of the chorosilane of Ivanov et al with Si-OH groups on the surface of the porous SiO<sub>2</sub> layer thereby forming bonding (coupling) structures linked to the porous dielectric layer.

4. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Kajiura et al (US 5907382).

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Kajiura et al disclose a method of **sealing** (See column 16, lines 58-59) a *porous* dielectric layer (See column 7, lines 49-51) comprising impregnating a *porous* metal oxide layer 121, 122 such as oxides of Si, Al (claimed dielectric) (See column 7, lines 7-10, 49-52) adjacent the substrate layer 11. (See column 7, lines 54-57), the with a silane coupling agent 161, 162 (See column 16, lines 58-59) such as aminosilane or epoxy silane (See column 7, lines 52-55).

It is the Examiner's position that the silane coupling agent of Kajiura et al is coupled to the surface of the pore forming coupling structures linked to the porous dielectric layer by definition of the coupling agent.

5. Claims 1 and 7-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Sawyer (US 4167045).

Sawyer discloses a method of filling voids (claimed sealing) of a *porous* (See column 2, lines 64-66) vascular prosthesis (See column 3, lines 36-40) of e.g. Dacron (claimed dielectric) comprising immersing the prosthesis in glutaraldehyde, allowing to stand for 3 hours, coating the prosthesis with albumin such that glutaraldehyde (claimed coupling agent) **cross-links** both to the material of the prosthesis (i.e. glutaraldehyde reacts with reactive groups on the surface of Dacron thereby forming claimed coupling structures linked to the dielectric) and to albumin (claimed sealing crosslinking agent) (See column 5, lines 23-29, 50-69); then coating again with glutaraldehyde(claimed cross-linking agent) (See column 5, lines 67-68).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Kurumatani et al (US 5632776) in view of Sawyer.

As to claims 1, 7-8, Kurumatani et al disclose a method of filling voids (claimed sealing) of a *porous* substrate (See column 2, lines 20-21; column 5, lines 14-28) of e.g. polyester (See column 2, lines 60-67) comprising impregnating the *porous* substrate with a denatured albumin (See column 4, lines 15-17), then heating the albumin to allow a crosslinking reaction to occur among the albumin molecules (claimed sealing cross-linking agent) (See column 4, lines 10-13, 20-21).

Kurumatani et al fail to teach that substrate is dielectric (Claim 1); and albumin is coupled to the substrate by reacting the porous substrate with a coupling agent (Claim 1).

Sawyer teaches that Dacron graft (claimed dielectric) is considered to be the most successful type of vascular prosthesis (See column 2, lines 25-29); and albumin can be crosslinked to a surface of Dacron vascular prosthesis (See column 3, lines 36-40) using glutaraldehyde (claimed coupling agent) which cross-links both to the material of the prosthesis (i.e. glutaraldehyde reacts with reactive groups on the surface of Dacron thereby forming claimed coupling structures linked to the dielectric) and to albumin (claimed sealing crosslinking agent) (See column 5, lines 23-29, 50-69).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used Dacron as a polyester vascular prosthesis of Kurumatani et al since Sawyer

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teaches that Dacron graft (claimed dielectric) is considered to be the most successful type of vascular prosthesis, and Kurumatani et al do not limit their polyester graft to particular polyester.

It would have also been obvious to one of ordinary skill in the art at the time the invention was made to have glutaraldehyde for coupling albumin to Dacron vascular prosthesis with the expectation of providing the desired strong bonding not to be separated when exposed to a bloodstream.

8. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fleckenstein et al (US 4902290) in view of Sawyer.

Fleckenstein et al teach that it is known to impregnate porous vessel prostheses with soluble gelatin (claimed substrate material) and to crosslink the same (DE14 94 939), crosslinking taking place with the aid of thiol group-containing compounds with subsequent oxidative crosslinking, accompanied by the formation of disulphide bridges (See column 1, lines 42-47).

Fleckenstein et al fail to teach that porous vessel prostheses is dielectric.

Sawyer is applied here for the same reasons as above. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used Dacron vascular prosthesis since Sawyer teaches that Dacron graft (claimed dielectric) is considered to be the most successful type of vascular prosthesis.

9. Claims 12-16 and 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ivanov et al/Kajiura et al/ in view of Nie et al (US 20030148544), further in view of Fleckenstein et al.

The cited prior art is applied here for the same reasons as above. The cited prior art fails to teach that the silane coupling agent has a thiol end so that a barrier molecule comprises a silicon atom coupled to a surface of the pore, a sulfur atom, and a flexible chain between the silicon atom

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and the sulfur atom (Claim 12); the flexible chain comprises a substantially long chain of CH<sub>2</sub> molecules (Claim 20) such as 4 chains (Claim 21).

Nie et al teach that silane compounds such as mercaptopropyl-trimethoxysilane and aminopropyltrimethoxysilane can be used for sealing pores (See P54, the second method) in glass (silica) (See P37).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used mercaptopropyl-trimethoxysilane as a silane coupling agent in Ivanov et al/Kajiura et al/with the expectation of providing the desired pore sealing since Nie et al teach that silane compounds such as mercaptopropyl-trimethoxysilane and aminopropyltrimethoxysilane are suitable for sealing pores in glass (silica).

It is held that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07.

Ivanov et al/Kajiura et al/ in view of Nie et al fail to teach introducing an oxidizing agent to facilitate formation of disulfide bonds between adjacent oxidized thiol end cap.

However, it is well known in pore sealing art to attach thiol group-containing compounds to pores, then subject the attached thiol group-containing compounds to oxidative crosslinking, accompanied by the formation of disulphide bridges, as evidenced by Fleckenstein et al (See column 1, lines 42-47).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have subjected thiol group-containing compounds attached to pores in the cited prior art to known oxidative crosslinking with the expectation of providing the desired sealing pores.



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As to claim 14, it should be noted that mercaptopropyl-trimethoxysilane is a homologue of claimed silane because it differs only in one methylene group. Homologues are a class of compounds differing only by methylene linkages and possessing similar properties. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a homologue of mercaptopropyl-trimethoxysilane, e.g. mercaptobutyl-trimethoxysilane in the cited prior art in view of their closely related structures and the resulting expectation of similar properties.

10. Claims 17 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ivanov et al/Kajiura et al/ in view of Nie et al (US 20030148544), further in view of Fleckenstein et al, and further in view of Cottle et al (US 2,874,192).

The cited prior art fails to teach that the oxidizing agent comprises formaldehyde.

However, it is well known in the art that disulfides such as mercaptals can be formed by reacting mercaptans with aldehyde, as evidenced by Cottle et al (See column 1, lines 3-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used aldehyde including formaldehyde with the expectation of providing the desired

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

McKnight (US 2,734,934) is cited to show that Dacron is dielectric polyester (See column 3, lines 6-9) made by condensation of terephthalic acid and ethylene glycol (See column 2, lines 69-72).

*Allowable Subject Matter*

12. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is 571-272-1429. The examiner can normally be reached on Monday-Thursday, 9:00AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elena Tsoy  
Primary Examiner  
Art Unit 1762

ELENA TSOY  
PRIMARY EXAMINER  
